

## CLAIMS

What is claimed is:

1. A non-aqueous electrolyte battery comprising: a positive electrode, a negative  
5 electrode, and a non-aqueous electrolyte, the positive electrode having a positive  
electrode active material-containing layer formed on a positive electrode current collector  
and containing an olivine-type lithium phosphate as a positive electrode active material,  
characterized in that:

the positive electrode current collector has a thickness of less than 20  $\mu\text{m}$ , and a  
10 surface of the positive electrode current collector that is in contact with the positive  
electrode active material-containing layer has a mean surface roughness  $R_a$  of greater  
than 0.026  $\mu\text{m}$ .

2. The non-aqueous electrolyte battery according to claim 1, wherein the  
15 olivine-type lithium phosphate is lithium iron phosphate.

3. The non-aqueous electrolyte battery according to claim 1, wherein the  
positive electrode current collector is an aluminum foil subjected to a roughened process  
and has a mean surface roughness  $R_a$  of less than 0.20  $\mu\text{m}$ .

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4. The non-aqueous electrolyte battery according to claim 2, wherein the  
positive electrode current collector is an aluminum foil subjected to a roughened process  
and has a mean surface roughness  $R_a$  of less than 0.20  $\mu\text{m}$ .

25 5. The non-aqueous electrolyte battery according to claim 3, wherein the

roughening process is carried out by polishing by blasting.

6. The non-aqueous electrolyte battery according to claim 4, wherein the roughening process is carried out by polishing by blasting.

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7. The non-aqueous electrolyte battery according to claim 2, wherein the lithium iron phosphate has an average particle size of 10  $\mu\text{m}$  or less.

8. The non-aqueous electrolyte battery according to claim 1, wherein the  
10 positive electrode active material-containing layer contains a conductive agent, the conductive agent has a BET specific surface area of 15  $\text{m}^2/\text{g}$  or greater, and the positive electrode active material-containing layer has a filling density of 1.7  $\text{g}/\text{cm}^3$  or greater.

9. The non-aqueous electrolyte battery according to claim 2, wherein the  
15 positive electrode active material-containing layer contains a conductive agent, the conductive agent has a BET specific surface area of 15  $\text{m}^2/\text{g}$  or greater, and the positive electrode active material-containing layer has a filling density of 1.7  $\text{g}/\text{cm}^3$  or greater.

10. The non-aqueous electrolyte battery according to claim 4, wherein the  
20 positive electrode active material-containing layer contains a conductive agent, the conductive agent has a BET specific surface area of 15  $\text{m}^2/\text{g}$  or greater, and the positive electrode active material-containing layer has a filling density of 1.7  $\text{g}/\text{cm}^3$  or greater.

11. The non-aqueous electrolyte battery according to claim 8, wherein the  
25 positive electrode active material-containing layer has a filling density of 3.15  $\text{g}/\text{cm}^3$  or

less.

12. The non-aqueous electrolyte battery according to claim 9, wherein the positive electrode active material-containing layer has a filling density of  $3.15 \text{ g/cm}^3$  or less.

13. The non-aqueous electrolyte battery according to claim 1, wherein carbon is superficially coated on, or adhered to, the positive electrode active material particles.

14. The non-aqueous electrolyte battery according to claim 1, wherein a portion of lithium sites in the positive electrode active material is substituted by a transition metal.

15. A non-aqueous electrolyte battery comprising: a positive electrode, a negative electrode, and a non-aqueous electrolyte, the positive electrode having a positive electrode active material-containing layer that is formed on a positive electrode current collector and contains an olivine-type lithium phosphate as a positive electrode active material, and the negative electrode containing a negative electrode capable of intercalating and deintercalating lithium, characterized in that:

the conductive agent has a BET specific surface area of  $15 \text{ m}^2/\text{g}$  or greater, and the positive electrode active material-containing layer has a filling density of  $1.7 \text{ g/cm}^3$  or greater.

16. The non-aqueous electrolyte battery according to claim 15, wherein the olivine-type lithium phosphate is lithium iron phosphate.

17. The non-aqueous electrolyte battery according to claim 15, wherein the positive electrode active material-containing layer has a filling density of  $3.15 \text{ g/cm}^3$  or less.

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18. The non-aqueous electrolyte battery according to claim 16, wherein the positive electrode active material-containing layer has a filling density of  $3.15 \text{ g/cm}^3$  or less.